OVARC is NOT WIRES-X

Summary

1. We are NOT using WIRES-X. We consider WIRES-X to be a legacy system and it requires propriety hardware from Yaesu. WIRES-X talk rooms are proprietary to Yaesu. Traditional WIRES-X systems do not have the versatility of multi-mode digital operation and are not easily connected to YSF and FCS Rooms. This is why OVARC does not use the WIRES-X Platform.

2. We use an MMDVM with Pi-Star which is an open source amateur supported system that supports both repeater and local hotspot operation. Pi-Star also supports D-Star, DMR, P-25 and NXDN digital modes. Any of the OVARC repeaters can be switched at any time to any of these different modes by a sysop.

3. The reason we are using Pi-Star with C4FM on a YSF reflector is for simplicity. We are able to maintain our linked repeater network at a low cost and with less maintenance. Also, the mode is easier to use than other digital modes. Our C4FM capable repeaters are normally linked together. Use any repeater and you are heard on all of them. The only exception is the Tucson reflector which occasionally is automatically bridged to a different reflector to allow access to a net. The US-AZ-Tucson (36252) reflector is normally bridged to the US-Oro-Valley-AZ (74158) reflector.

4. OVARC has installed and operates multiple YSF reflectors. The current list of reflector names and numeric designations are:

   US-Oro-Valley-AZ (74158)

   US-AZ-Tucson (36252)

5. Our repeaters pass the GPS information generated by the user radio into the system and into APRS. Other users can see where you are located and how far you are from their location. This function is controlled by the user in the setup of his/her radio. The operator location can also be displayed on a map at www.aprs.fi by entering the operator callsign.

6. A hotspot can be configured to connect to one of our reflectors and will see the same traffic that the repeater sees and broadcasts. The advantage of a hotspot is the ability to move away from the local connection and monitor/operate on some world-wide reflectors that have more traffic.

See the information below for a more detailed description of the OVARC C4FM System.

A lot of information published about WIRES-X does not apply to our system. There are three C4FM networks currently available for Amateur Radio operation. A network can be viewed as a conference bridge that allows a large number of individual nodes to interact.

The first C4FM networks made available were variations of the WIRES-X system sponsored by Yaesu. This network is accessed by using a proprietary modem marketed by Yaesu or by using some C4FM capable radios that can be configured to supply WIRES-X operation in combination with a special cable and a supporting PC to supply the interface to the Internet. The WIRES-X configuration supports a single digital mode (C4FM). The reflectors in the WIRES-X system are referred to as **rooms**. Wires-X talk rooms are proprietary to Yaesu, require extra Yaesu hardware and are not easily connected to non-WIRES-X reflectors.

We use a Multi-Mode Digital Voice Modem (MMDVM) with Pi-Star, which is an open source amateur supported system that supports both repeater and local hotspot operation. Pi-Star also supports D-Star, DMR, P-25 and NXDN digital modes. Any of the OVARC repeaters can be switched at any time to any of these different modes by a sysop.

Pi-Star supports two C4FM networks – the YSF reflectors that we use. and the FCS reflectors. OVARC uses the YSF network which utilizes a normal infrastructure associated with local and area coverage. The **reflector** itself does not connect to an area, but allows connections from other repeaters and hotspots (nodes) normally in the associated area.

The FCS reflectors have a similar area infrastructure but are expanded to supply state by state reflectors to enable repeaters and hotspots to interconnect using a statewide structure. OVARC originally used the Arizona FCS reflector to interconnect our repeaters but shifted to the YSF system with our own reflectors which have a simpler number system to access a particular reflector.

Our C4FM configured repeaters are normally linked together. Use any repeater and you are heard on all of them. The only exception is the Tucson reflector which occasionally is automatically bridged to a different reflector to allow access to a net. The **US-AZ-Tucson** (36252) reflector is normally bridged to the **US-Oro-Valley-AZ** (74158) reflector. The Calle and Marana repeaters are normally connected to Tucson and the rest are connected to Oro Valley.

OVARC has installed, and currently operates, multiple YSF rooms. We have chosen YSF for its low cost, ease of implementation, low maintenance and non-proprietary design. The current list of room names and numeric designations are:

   US-Oro-Valley-AZ (74158) – available for general purpose use (PC based)

   US-AZ-Tucson (36252) – available for general purpose use (Raspberry Pi)

Our repeaters CAN be moved away from an Oro Valley reflector, but not directly to a WIRES-X room. Some WIRES-X rooms may be bridged to a YSF or FCS reflector and usually indicate that connection in the reflector name.

The procedure for moving an OVARC repeater to a different YSF or FCS talk room is the same as is described in the radio manuals for selecting a WIRES-X room. But again, WIRES-X rooms are not supported. Use the YSF reflector number to select that reflector. Use the position in a table to calculate the number to access an FCS reflector. If you move a repeater to a different C4FM reflector using the WIRES-X procedure, do NOT key your radio before disconnecting from the repeater. Doing so may disconnect the reflector you are connected to from a WIRES-X room if it was bridged. The repeater will remain connected to the new reflector.

If a repeater is moved away from the default Oro Valley sponsored reflector, it will return to the default five minutes after the last user key-up on the repeater input. Thus, the repeater can be used for a local user to talk to someone on another reflector selected by the user, but cannot be used for extended monitoring of the reflector that is not the default.

Our repeaters DO pass the GPS information passed by the user radio into the system and into APRS. Other users CAN see where you are located and how far you are from their location. This function is controlled by the user in the setup of his/her radio. The operator location can also be displayed on a map at www.aprs.fi by entering the operator callsign.

A hotspot can be configured to connect to one of our reflectors and will see the same traffic that the repeater sees and broadcasts. The advantage of a hotspot is that an individual user has the ability to easily move away from the local connection and monitor/operate on some world-wide reflectors that have more traffic without tying up a repeater.

Be aware that ALL the OVARC digital repeaters can be configured to the C4FM mode in case of an emergency.

Yaesu radios can be configured on a single channel to operate in either C4FM or Analog mode. The PL tone settings will be ignored when using the digital mode so all that is required by the operator is to select either the digital (DV) or analog (FM) mode from their radio before keying up. Avoid using the (VW) mode on our system for compatibility. Be sure to program both tone transmit and tone squelch on receive, to avoid listening to the digital buzz when in the analog mode. If the Automatic Mode Select (AMS) is ON, the radio will respond to either a digital or analog signal on a channel. The AMS mode can be problematic on our Pi-Star controlled system, and it is suggested that manual selection of either DV or FM be used to avoid confusion.